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### THE GOAT : A NEW LEASE ON LIFE

by NEIL THOMAS

The goat is often described as the poor man's cow, although the peasant farmer might be tempted to reply that the cow is the rich man's goat. The goat fills a production niche in many agricultural systems that is poorly understood and extremely difficult to quantify. In northern Mexico, for example, there are several million goats managed in extremely extensive production systems, under conditions where their survival seems almost impossible.

The vegetation of northern Mexico ranges from pine-covered mountain slopes at high altitudes to almost barren desert in low-lying areas. The changing vegetation is due to the difference in rainfall, with the desertic areas receiving less than 350 mm. annually, unevenly distributed. Most of these rangelands have been grazed by cattle and horses, but have gradually degraded to the point where the goat is the only animal capable of gaining sustenance from them.

The final product from a herd of goats may be the milk or a milk product, cabrito (the month-old male milk-fed offspring), or a larger meat animal. This will depend on the type and quality of grazing available, the distance of the enterprise from a major settlement, and the objective of the owner. In nearly all cases, herd productivity is tied to the annual pattern of range forage production, which, in its turn, is closely related to the rainfall pattern. The typical production from a lactating animal will average 60-70 litres per lactation (the complete period of milk production), the daily output falling sharply to 100 ml. from an initial peak of 500-750 ml.

In some areas where crops are grown, crop by-products form an important part of the herd's food -- in this situation, many of the flock owners are seminomadic, following their herd from field to field.

Dr. K. Francisco Byerly, the Technical Sub-Director of the Centro de Investigaciones Agricolas del Norte (CIAN), of Mexico's Instituto Nacional de Investigaciones Agricolas, is leading the development of new research concepts that will greatly ease the task of quantifying these production systems. His theory is that animal production is completely dependent on forage supply, such that quantifying the balance of desirable and non-desirable forage species in rangeland should lead to an estimate of that range's production potential.

How do you test the validity of this concept? By carrying out a wide-scale survey of the structure and productivity of different herds in different types of rangeland. "A herd of animals under this type of management is just like an insect population", says Dr Byerly, a trained entomologist. "Its productivity will depend on its age structure and the food available. It should be possible to develop a quantifiable model which can be used to determine optimum management strategies in accordance with the conditions of the grazing available."

As goats depend to a large extent on the amount of browse available, a simple determination of the proportion of desirable to non-desirable browse species, with corrections for a grass component and total biomass available, will allow a simple classification of potential productivity. "We are creating a dynamic model for the rangelands of northern Mexico where, although the component species may change, there are always desirable and non-desirable species", says Dr Byerly.

The goat tends to be a maligned animal in many parts of the world. According to one of Mexico's leading goat producers, man has taken advantage of the goat's superb ability to survive under the harshest of range conditions, with the result that the goat has been blamed for the irreversible destruction of many million hectares of rangeland. The goat is but man's tool, however,

and with sensible management can live in equilibrium with even the poorest of environments.

On the rangelands of Mexico, it is common to find that the goat is the 'criollo', the rustic descendent of the animals brought to Mexico by the Spanish in the 16th century. This is the only race -- it cannot be called a breed -- that can daily walk the tremendous distances, under extreme conditions, in order to find enough food and water. However, in those areas where crop by-products or residues are found, the criollo is commonly crossed with improved breeds, such as the Nubian, so that the potential of the available feed can be realized by a more productive animal. On such feeds, an average crossbred animal could sustain a daily production of more than one litre of milk throughout her lactation for a total of approximately 200 litres.

To support the production research under range conditions, experimental work is also being carried out with herds grazing crop residues or being fed crop by-products in order to develop a simple classification of the feeding value of these substances for milk or meat production. Eventually this will lead to recommendations for different regions, depending on the type, quantity, and quality of the materials available -- field stubbles of corn, sorghum, wheat, and cotton, and the by-products of processing cotton, sunflower, grape, and legume crops.

To overcome the almost impossible task of quantifying the amount of food available to a highly mobile grazing flock, an experimental technique has been developed to indirectly estimate the availability of food, by feeding them a supplementary diet. This also makes it possible to compare the productivity of different flocks grazing different residues, such flocks often being of different genetic background.

By questioning local farmers, information that could have considerable significance in the development of improved farming systems has been obtained. Some farmers are certain that they have achieved complete control of cotton pests by judicious management of the goat. "After harvesting the cotton", says

one, "I turn my herd into the stubble. In a very short time there is nothing left but the stalk; all remaining cotton, unopened buds and the leaves have been eaten." As the unopened buds are the principal source of the cotton pest larvae that will drop to the ground and winter in the soil, the incidence of these pests in the subsequent year is greatly diminished. The same farmer is convinced that if it becomes necessary to use a pesticide, it is because of an invasion of pests from adjacent farms and not as a result of a build-up from sources of infection on his own land. Such means of pest control in a crop traditionally drowned in pesticides has considerable significance beyond the boundaries of Mexico.

The goat is being offered a new lease on life in northern Mexico. It appears to have potential not only in systems where it provides the major source of income for the poorer people, but also as a component of integrated production systems. The research being carried out at CIAN could greatly help turn these ideas into reality.

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